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BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
FOREST INSECT INVESTIGATIONS

Project | Date January 14, 1949 | Author

SUBJECT—

TITLE

FOREST INSECT SURVEY
EASTERN LASSEN AND SUSANVILLE AREAS
LASSEN COUNTY, CALIFORNIA
SEASON OF 1948

By

J. W. Bongberg

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29 Forestry Bldg., U. C.
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INDEX NO.—

U. S. GOVERNMENT PRINTING OFFICE 16—47272-1

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EASTERN LASSEN AND SUSANVILLE AREAS
LASSEN COUNTY, CALIFORNIA
SEASON OF 1948

Approved by:

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FOREST INSECT SURVEY

EASTERN LASSEN AND SUSANVILLE AREAS

LASSEN COUNTY, CALIFORNIA

SEASON OF 1948

FIELD EXAMINATION

Personnel: Dale C. Prentice, H. Parker Spalding, David Wensing, A. H. Retan, and J. W. Bongberg, Forest Insect Laboratory, Bureau of Entomology and Plant Quarantine, 29 Forestry Building, University of California, Berkeley 4, California.

Date: August 10, 1948 to September 2, 1948.

Methods: Roadside sample plots, traverse strips, and reconnaissance.

AREAS EXAMINED

A field cruise was made on 4,773 acres of roadside plots and traverse strips sampling 326,970 acres of virgin timberlands in the respective entomological reporting units and areas as shown on the map appended to this report.

IMPORTANT FOREST INSECT PROBLEMS REVEALED BY THE SURVEY

Bark beetles and other cambium-mining insects were found to occur in all parts of the reporting areas. The insect infestations occurred chiefly in virgin stands and to a lesser degree in the cutover reserve. The intensity of current attacks by the Jeffrey pine beetle, (Dendroctonus jeffreyi Hopk.) was noted to have increased over the low level of the past several years in all parts of the reporting areas.

INSECTS RESPONSIBLE FOR PINE DAMAGE IN 1947 AND 1948

Several important forest insects were found attacking and killing ponderosa pine, namely: The western pine beetle, (Dendroctonus brevicomis Lec.); the mountain pine beetle, (Dendroctonus monticolae Hopk.); the Oregon pine engraver beetle, (Ips oregoni Eich.); and the California flathead borer, (Melanophila californica Van Dyke). The insects responsible for killing Jeffrey pine were: The Jeffrey pine beetle, (Dendroctonus jeffreyi Hopk.); and the California flathead borer, (Melanophila californica Van Dyke).

CHARACTER OF 1947 AND 1948 BARK BEETLE INFESTATIONS

The loss of virgin timber as a result of attacks by insects during 1947 was found to be of an endemic character, but slightly above the rate of

loss encountered during 1946. Infested trees were scattered generally throughout the timbered areas, and for the most part were mature or over-mature and of a decadent and high risk type. Loss in ponderosa pine resulting from attacks by the western pine beetle during 1947 showed a two-fold increase over the previous year along the western portion of the Eastern Lassen reporting area--namely, in the Butte Creek, Beggard Buttes, and Stephens Ranch entomological units. Of particular note during 1948 was a general increase of activity by the Jeffrey pine beetle in the northern portion of the Eastern Lassen Area where Jeffrey pine is the predominant tree species. There was no evidence noted of any concentrated killing of reserve trees by the pine engraver beetle, nor were there any other centers of epidemic loss or aggressive infestations encountered during 1948 in any of the area covered by the survey.

TREND OF BARK BEETLE INFESTATIONS

Since 1941, forest insect infestations throughout the Eastern Lassen and Susanville Areas have been endemic, and the rate of loss has fluctuated only slightly from year to year. No attempt is made in this report to show the yearly change in this low endemic loss rate. However, from conditions noted during the current loss survey, there is some indication that the trend of loss may be upward from the low endemic level which has prevailed for the past several years. The complete record of loss for 1948 will not be available until an additional inventory of dead trees on the sample plots is made during 1949. A close watch will be maintained to detect signs of any aggressive infestations and possible epidemic loss.

INSECT DAMAGE ON SAMPLE PLOTS IN 1947

In order to determine the amount of loss caused by bark beetles and other forest insects to the timber resources, an inventory of trees which have been killed is made annually on permanent sample plots scattered throughout the forested areas. A summary of the number of trees, the board-foot volume, and the percent of stand killed on these sample plots during 1947 is given in Table 1. As indicated by the table, the severity of loss was variable on the respective plots, and the majority occurred in ponderosa pine. In general, a higher rate of loss was encountered along the western portion of the Eastern Lassen reporting area.

ESTIMATED 1947 BARK BEETLE DAMAGE IN VIRGIN PINE STANDS

By expanding the sample plot measurements of loss to the remaining virgin acreage in the Eastern Lassen and Susanville Areas, it is estimated that bark beetles destroyed a total of 19,430,000 board feet of pine timber during 1947. This loss amounts to approximately 0.5 percent of the total merchantable green pine volume and is roughly equivalent to the annual increment. The distribution of the 1947 loss estimates on the several entomological units and reporting areas is given in Table 2.

BARK BEETLE DAMAGE IN 1948

The annual inventory of insect-caused loss for 1948 is as yet incomplete

and no attempt is made here to estimate the total damage expected. However, partial records of current loss are sufficient to appraise generally the intensity and trend of the infestations. In particular, the Jeffrey pine beetle was noted as being much more aggressive than for the past several years. In effect, it can be expected that the total loss of pine during 1948 will increase, providing other insects attacking ponderosa pine continue at their current level. Increased activity by the western pine beetle was first noted and reported1/ in the Butte Creek entomological unit in 1946. The increase in loss in this general portion of the Eastern Lassen Area continued during 1947, and all indications point to a continued increase during 1948. The rate of loss as measured from seven plots sampling conditions in this area is as follows:

Acres Sampled	Board Foot Per Acre Loss- P. Pine and J. Pine		
	1946	1947	1948*
1,120.0	23.6	36.1	67.6

* Estimated loss for the total calendar year

The current loss in this area is still not of epidemic proportions but will bear watching to detect continued aggressiveness and possible epidemic conditions.

CURRENT BARK BEETLE DAMAGE IN CUTOVER RESERVE STANDS

A record and measurement of loss on areas cut by several separate methods is being maintained on the Black's Mountain Experimental Forest. Also, records are being kept on the area selectively cut in the Willard Creek Unit. With these exceptions, however, no attempt is being made to determine, by successive annual measurements, insect-caused mortality in the cutover reserve stands in the Eastern Lassen Area. A watch is being maintained over these areas, however, by general reconnaissance. On the areas visited during the course of the current survey, no abnormal or severe damage caused by insects was noted.

INSECT CONTROL RECOMMENDATIONS

Since the inception of selective cuttings in the eastside pine areas whereby trees of current high risk to insect attack have been removed, highly satisfactory results in beetle control have been obtained. Also, for the periods in which records are available, these selective cuttings have prevented conditions leading to epidemic infestations and loss. As a result, repeated

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1/ Johnson, P. C. Forest Insect Survey, Eastern Lassen and Susanville Areas, Lassen County, California. Season of 1946. April 22, 1947.

recommendations for beetle control have urged that areas be cut on a basis which will remove trees of current poor health and high risk to insect attack. This plan of action is being followed on National Forest lands wherever the hazard of beetle loss is high and where this selective cutting can be fitted to the over-all plan in management, and is to be commended. The advance planning for contemplated sales has allowed ample time for adequate surveys to be made in order that areas may be delineated and selected where the greatest benefit can be obtained for beetle control purposes, consistent with management.

TABLE 1. PINE TIMBER KILLED BY BARK BEETLES ON VIRGIN SAMPLE PLOTS, EASTERN LASSEN AND SUSANVILLE AREAS, LASSEN COUNTY, CALIFORNIA.

SEASON OF 1946

Entomological Unit	Sample Plot No.	Timbered Acres	Hazard Rating	Pine Stand: Tree Spp.	Pine Stand: Volume M.B.M.	Timber Killed in 1947: No. of Trees	Timber Killed in 1947: Volume (M.B.M.)	Timber Killed in 1947: Volume Per Acre	Timber Killed in 1947: % of Stand
EASTERN LASSEN AREA									
Cobie Mountain	RD- 1	160	V	PP	670	3	910	5.7	0.14
				JP	110	1	150	0.9	0.14
				Total	780	4	1,060	6.6	0.14
	RD- 2	160	V	PP	670	11	5,400	33.7	0.81
				JP	110	None	None	None	None
				Total	780	11	5,400	33.7	0.69
Mixie Valley	RD-25	80	V	PP	370	None	None	None	None
				JP	270	1	3,030	37.9	1.12
				Total	640	1	3,030	37.9	0.47
Nigger Springs	RD- 4	160	IV	PP	40	8	9,190	57.4	23.00
				JP	1,170	None	None	None	None
				Total	1,210	8	9,190	57.4	0.76
	RD- 5	160	IV	PP	1,680	13	9,530	59.6	0.57
				JP	610	2	720	4.5	0.12
				Total	2,290	15	10,250	64.1	0.45
	RD-51	160	IV	PP	860	4	9,430	58.9	1.10
				JP	890	None	None	None	None
				Total	1,750	4	9,430	58.9	0.54
	RD-52	160	IV	PP	860	3	9,650	60.3	1.12
				JP	890	None	None	None	None
				Total	1,750	3	9,650	60.3	0.55
	RD-54	160	IV	PP	860	6	4,570	28.6	0.53
				JP	890	None	None	None	None
				Total	1,750	6	4,570	28.6	0.26
Beaver Creek	RD- 3	160	IV	PP	780	9	8,490	53.8	1.08
				JP	620	1	1,080	6.8	0.17
				Total	1,400	10	9,530	59.6	0.68
	RD- 6	160	III-IV	PP	440	2	6,500	40.6	1.48
				JP	820	3	7,480	46.8	0.91
				Total	1,260	5	13,980	87.4	1.11
	RD-50	160	IV	PP	610	1	1,210	7.6	0.20
				JP	720	2	2,970	18.6	0.41
				Total	1,330	3	4,180	26.1	0.31
Gordon Valley	RD-24	80	III-IV	PP	1,600	5	2,780	34.8	0.17
				JP	910	None	None	None	None
				Total	2,510	5	2,780	34.8	0.11
	RD-26	160	III-IV	PP	1,030	5	4,090	25.6	0.40
				JP	710	None	None	None	None
				Total	1,740	5	4,090	25.6	0.24
	RD-39	72	IV	PP	1,600	6	7,430	103.2	0.46
				JP	910	None	None	None	None
				Total	2,510	6	7,430	103.2	0.30
Butte Creek	RD- 8	160	III	PP	530	1	5,000	31.3	0.94
				JP	1,270	1	680	4.3	0.05
				Total	1,800	2	5,680	35.6	0.32
	RD-9	160	III	PP	360	11	8,700	54.4	2.42
				JP	2,410	None	None	None	None
				Total	1,770	11	8,700	54.4	0.49
	RD-10	160	III	PP	1,690	12	20,780	129.9	1.23
				JP	1,280	None	None	None	None
				Total	2,970	12	20,780	129.9	0.70
Hails Flat	RD- 7	160	III	PP	90	2	4,590	28.7	5.10
				JP	1,160	4	11,190	69.7	0.96
				Total	1,250	6	15,780	98.6	1.26
	RD-29	160	III-IV	PP	620	14	22,230	138.9	3.58
				JP	760	1	890	5.6	1.17
				Total	1,380	15	23,120	144.5	1.68
Harvey Valley	RD-31	160	IV	PP	2,280	9	19,140	119.6	0.84
				JP	220	1	1,050	6.6	0.48
				Total	2,500	10	20,190	126.2	0.81
Record Buttes	RD-11	160	III	PP	470	12	18,130	113.3	3.85
				JP	2,060	2	6,420	40.1	0.31
				Total	2,530	13	24,550	153.4	0.97
Stephens Ranch	RD-14	160	III	PP	2,650	2	2,010	12.6	0.08
Crater Mountain	RD-30		III-IV	PP	2,300	4	6,270	39.2	0.27
				JP	240	None	None	None	None
				Total	2,540	4	6,270	39.2	0.25
Merrill Flat	RD-33	100	III-IV	PP	2,630	4	2,190	21.9	0.08
				JP	180	None	None	None	None
				Total	2,810	4	2,190	21.9	0.08
	RD-34	160	III-IV	PP	1,600	5	10,690	66.8	0.67
				JP	400	None	None	None	None
				Total	2,000	5	10,690	66.8	0.53
Alaska Mountain	RD-F	1,013	IV	PP	14,680	80	75,620	74.7	0.51
				JP	1,060	3	4,200	4.1	0.40
				Total	15,938	83	79,820	78.8	0.50
TOTAL		4,985		PP	42,980	227	274,490	60.8	0.64
				JP	19,670	22	39,820	8.8	0.20
				Total	62,650	249	314,310	69.2	0.50
SUSANVILLE AREA									
Willard Creek	RD-35	160	III-IV	PP	680	1	1,410	8.8	0.20
				JP	1,570	1	1,210	7.6	0.08
				Total	2,430	2	2,620	16.4	0.11
Merrillville	RD-37	88	III-IV	PP	960	4	5,650	81.1	1.01
				JP	340	1	290	4.3	0.85
				Total	900	5	5,940	87.4	0.66
TOTAL		248		PP	1,640	5	7,060	31.0	0.30
				JP	1,910	2	1,500	6.5	0.08
				Total	3,330	7	8,560	37.5	0.26
TOTAL OF EASTERN LASSEN AND SUSANVILLE AREAS		4,773		PP	44,400	232	281,550	59.0	0.63
				JP	21,580	24	41,320	8.7	0.19
				SP	400	None	None	None	None
				Total	66,380	256	322,870	67.6	0.49

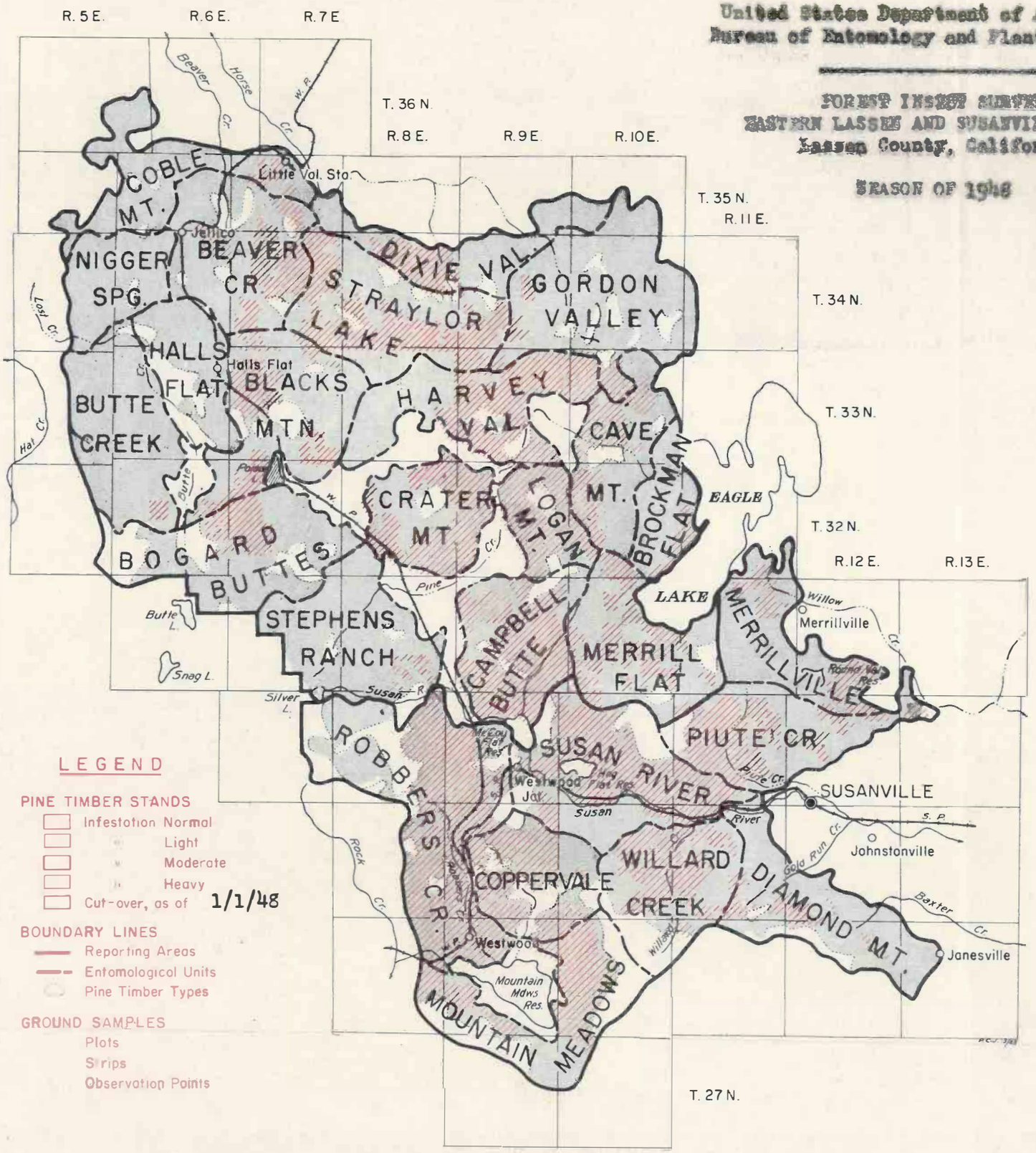
TABLE 2. ESTIMATED VIRGIN PINE TIMBER KILLED BY BARK BEETLES IN 1947.

Entomological Units	Virgin Pine Stand (As of Jan. 1, 1948) Acreage	Tree Typ.	Volume M.B.M.	Pine Timber Killed in 1947 No. of Trees	Volume M.B.M.	Volume M.B.M./Acre	% Stand
NATURE LARGE AREA							
Cable Mountain	19,980	PP	103,120	879	394	19.7	0.38
		JP	10,740	60	10	0.5	0.09
Dixie Valley	12,690	PP	62,870	42	120	9.5	0.19
		JP	30,270	173	360	28.5	1.19
Hidden Springs	14,630	PP	73,110	653	785	52.9	1.07
		JP	85,320	46	13	0.9	0.15
Beaver Creek	18,090	PP	116,270	492	610	33.7	0.52
		JP	45,890	235	436	24.1	0.95
Strayler Lake	14,510	PP	95,200	427	449	30.9	0.47
		JP	89,050	207	190	10.3	0.30
Gordon Valley	30,730	PP	267,070	1,360	1,270	41.3	0.44
		JP	112,990	453	423	23.8	0.38
Butte Creek	26,620	PP	221,340	938	1,302	48.9	0.59
		JP	178,180	339	434	16.3	0.24
Falls Flat	11,280	PP	17,240	575	965	85.5	0.55
		JP	75,940	180	425	37.7	0.56
Klondre Mountain	22,160	PP	253,830	1,751	1,695	76.7	0.67
		JP	95,910	66	91	4.1	0.09
Harvey Valley	13,270	PP	166,430	481	1,059	79.8	0.64
		JP	21,370	53	58	4.4	0.27
Cave Mountain	10,130	PP	92,010	479	466	46.2	0.51
		JP	23,190	159	163	16.1	0.70
Negard Buttes	20,380	PP	230,230	676	1,284	63.0	0.56
		JP	97,010	143	420	20.1	0.42
Stephens Ranch	26,600	PP	368,220	1,091	1,676	63.0	0.43
		JP	11,920	186	535	20.1	0.45
Crater Mountain	6,350	PP	67,020	158	237	37.3	0.27
		JP	15,200	52	79	12.4	0.52
Logan Mountain	1,120	PP	11,590	88	41	36.6	0.36
		JP	10,050	9	14	12.5	0.14
Coryhell Butte	3,710	PP	38,030	91	138	37.1	0.36
		JP	8,320	31	46	12.4	0.55
Merrill Flat	15,030	PP	161,830	339	509	33.7	0.32
		JP	40,470	109	169	11.2	0.42
		SP	28,620	None	None	None	None
Brosham Flat	9,710	PP	5,570	277	281	28.9	0.50
		JP	26,470	20	94	9.7	0.36
AREA SUB-TOTAL	277,200	PP	2,411,340	13,263	12,973	46.8	0.54
		JP	941,470	2,536	3,910	14.1	0.42
		SP	28,620	None	None	None	None
		Total	3,381,430	15,777	16,883	60.9	0.50
SUSANVILLE AREA							
Roberts Creek	8,760	PP	3,390	79	116	13.2	3.42
		JP	172,050	72	100	11.4	0.07
Deep River	6,730	PP	60,530	41	60	8.8	0.09
		JP	24,800	41	52	7.6	0.21
Willard Creek	8,590	PP	50,400	52	76	8.8	0.15
		JP	56,080	52	63	7.6	0.12
Flute Creek	11,570	PP	114,170	451	680	58.3	0.56
		JP	24,060	104	34	2.9	0.14
Susanville	16,060	PP	153,110	948	1,335	83.1	0.87
		JP	28,350	225	69	4.3	0.24
AREA SUB-TOTAL	51,770	PP	387,890	1,971	2,227	43.0	0.57
		JP	268,280	501	320	6.2	0.12
		Total	656,170	2,072	2,547	49.2	0.39
TOTAL OF NATURE LARGE AND SUSANVILLE AREAS	328,970	PP	2,799,230	14,814	15,200	46.2	0.54
		JP	1,209,750	3,035	4,230	12.9	0.35
		SP	28,620	None	None	None	None
		PP+JP+SP	4,037,600	17,849	19,430	59.1	0.48

United States Department of Agriculture
Bureau of Entomology and Plant Quarantine

FOREST INSECT SURVEY
EASTERN LASSEN AND SUSANVILLE AREAS
Lassen County, California

SEASON OF 1948



LEGEND

PINE TIMBER STANDS
- Infestation Normal
- Light
- Moderate
- Heavy
- Cut-over, as of 1/1/48

BOUNDARY LINES
- Reporting Areas
- Entomological Units
- Pine Timber Types

GROUND SAMPLES
- Plots
- Strips
- Observation Points

3-11-49

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